

Division of Water Resources / State Revolving Fund Loan Program  
William R. Snodgrass TN Tower, 12<sup>th</sup> Floor  
312 Rosa L. Parks Avenue, Nashville TN 37243  
Phone: (615) 532-0445

## *Memorandum*

**DATE:** February 6, 2017

**TO:** Vojin Janjic, Division of Water Resources, Water Quality Branch

**FROM:** Felicia Freeman, Technical Staff, State Revolving Fund Loan Program

**SUBJECT:** Transmittal of the Plans and Specifications, the Review Fee Check, Hydraulic Calculations  
Chapel Hill (Marshall County), Tennessee  
SRF xxxx-xxx  
Contract 1, **Sewer System Improvements**

**cc:** Greg Davenport, P.E., (via e-mail)  
Sam Gaddipati, Environmental Manager, SRF Loan Program (via e-mail)  
Bagher Sami, Manager, SRF Administrative Section (via e-mail)  
Design File

Accompanying this memorandum are one copy each of the (1) Plans and Specifications for the contract and (2) the review fee check for **\$20.00** and (3) the hydraulic calculations. The project engineer with J.R. Wauford & Company – Nashville, TN, is Greg Davenport, P.E.

**This project is a State Revolving Fund (SRF) project.** The Preliminary Engineering Report and Plans and Specifications are forwarded for review in accordance with the *Memorandum of Understanding between Construction Grants and Loans* and *Water Pollution Control (WPC)*, signed on 3/17/94. Any written or emailed comments should be received by **February 28, 2017**, so that they may be included with our comments to the consulting engineer. **SRF will not proceed until a written or emailed response is received.**

Please address your review comments or approval to me. If you have any questions, please give me a call (615) 253-5134 or e-mail [felicia.d.freeman@tn.gov](mailto:felicia.d.freeman@tn.gov).

**WPN17-0113**



# WAUFORD

J. R. Wauford & Company, Consulting Engineers, Inc.  
www.jrwauford.com

February 3, 2017

Mr. Sherwin N. Smith  
Director  
State Revolving Fund Loan Program  
Division of Water Resources  
William R. Snodgrass - Tennessee Tower  
312 Rosa L. Parks Avenue - 12th Floor  
Nashville, Tennessee 37243-1102

RE: Morningside Drive 8-inch Force Main  
Chapel Hill, Tennessee  
Wauford Project No. 2034; Contract 17-01

Dear Mr. Smith:

Enclosed you will find the following documents related to the subject project:

1. Four (4) sets of plans, four (4) project manuals, a set of design notes, and the plans review fee
2. Four (4) copies of the Facility Plan
3. One copy of the Interdisciplinary Review Letter
4. A signed copy of the SRF Loan Request Letter
5. A signed copy of the Cost and Effectiveness Self Certification Letter
6. A signed copy of the Fiscal Sustainability Plan
7. A signed copy of the Plan of Operations
8. A signed copy of the Project Performance Standards
9. A cost estimate of the work

The Town of Chapel Hill is interested in seeking funding for this project in the form of a Clean Water SRF Loan and are hopeful that principal forgiveness may be a part of the loan. Chapel Hill will be submitting the required financial information to your department soon.

Please do not hesitate to contact me if you have comments or questions.

Yours very truly,

J. R. WAUFORD & COMPANY,  
CONSULTING ENGINEERS, INC.

J. Gregory Davenport, P.E.  
President

JGD:lan

Enclosures

cc: Mark Graves, Town Administrator – Chapel Hill

529 Old Hickory Boulevard, Suite A  
Jackson, Tennessee 38305  
(731) 668-1953  
Fax (731) 668-6809

2835 Lebanon Pike  
P.O. Box 140350  
Nashville, Tennessee 37214  
(615) 883-3243  
Fax (615) 391-3710

908 West Broadway Avenue  
Maryville, Tennessee 37801  
(865) 984-9638  
Fax (865) 983-4327

J.R. WAUFORD & COMPANY  
CONSULTING ENGINEERS, INC.

DATE	INVOICE NO	COMMENT	AMOUNT	NET AMOUNT
02/03/2017	020317	WAUFORD PROJECT NO. 2034; CHAPEL HILL		20.00
DATE 02/03/17 VENDOR STATE OF TENNESSEE (7694)			TOTAL	20.00

J. R. WAUFORD & COMPANY  
CONSULTING ENGINEERS, INC.  
2835 LEBANON ROAD  
NASHVILLE, TENNESSEE 37214  
(615) 883-3243

STATE OF TENNESSEE (7694)  
LEWIS & CLARK COUNTY

Twenty and no/100

02/03/17 47290 \$20.00

STATE OF TENNESSEE (7694)

J. R. WAUFORD & COMPANY  
CONSULTING ENGINEERS, INC.



*[Handwritten signature]*

02/03/17 47290 \$20.00

2034-Chc. l Hill

8-inch Morningside Face Main

## TENNESSEE DEPARTMENT OF ENVIRONMENT AND CONSERVATION

JRWanland &amp; Co., Consulting Engrs., Inc

## DIVISION OF WATER POLLUTION CONTROL

02/03/17

## Plans Review Fee Worksheet

Activity	Fee Paid	Fee Due
1. <u>Wastewater Plants:</u>		
Major Industrial Facility w/flow $\geq$ 5 MGD	=	\$ <u>1,500.00</u>
Major Industrial Facility w/flow < 5 MGD	=	\$ <u>1,000.00</u>
Minor Industrial Facility w/flow $\geq$ 0.1 MGD	=	\$ <u>500.00</u>
Minor Industrial Facility w/flow < 0.1 MGD	=	\$ <u>250.00</u>
Sewage Treatment Facility w/design flow $\geq$ 5 MGD	=	\$ <u>1,500.00</u>
Sewage Treatment Facility w/design flow $\geq$ 1 but < 5 MGD	=	\$ <u>1,000.00</u>
Sewage Treatment Facility w/design flow $\geq$ 0.075 MGD but < 1 MGD	=	\$ <u>500.00</u>
Sewage Treatment Facility w/design flow $\leq$ 0.075 MGD	=	\$ <u>250.00</u>
2. <u>Collection Systems:</u>		
Collection Lines - \$25.00 per 250 feet (or portion thereof) of sewage collection line not to exceed \$1,500.00 ( <u>No fee</u> for Force Main Review)	=	\$ <u>          </u>
Example 501 linear feet sewer / 250 = 2+ = 3 x 25 = \$ 75		
3. <u>Equalization Basins:</u>		
Holding Capacity $\geq$ 5 million gallons (MG)	=	\$ <u>300.00</u>
$\geq$ 1 MG but < 5 MG	=	\$ <u>200.00</u>
$\geq$ 0.075 MG but < 1 MG	=	\$ <u>100.00</u>
< 0.075 MG	=	\$ <u>50.00</u>
4. <u>Pumping Stations:</u>		
Design Capacity $\geq$ 5 MGD (3473 GPM)	=	\$ <u>300.00</u>
$\geq$ 1 MGD but < 5 MGD	=	\$ <u>200.00</u>
w WTP capacity = 0.17 MGD $\rightarrow$ $\geq$ 0.075 MGD but < 1 MGD (695 GPM - 3473 GPM)	=	\$ <u>100.00</u>
$\geq$ 0.075 MGD but < 1 MGD (52 GPM - 695 GPM)	=	\$ <u>50.00</u>
< 0.075 MGD (52 GPM)	=	\$ <u>50.00</u>
5. <u>Wastewater Plant and/or Collection System Modifications:</u>		0.20(100) = \$20.00
The plans review fee for modifications to wastewater plants and/or collection systems shall be 20% of the full review fee based on the category and size of the resulting facility.	=	\$ <u>20.00</u>
TOTAL PLAN REVIEW FEE (sum of all individual fees)	=	\$ <u>20.00</u>

Hydraulics

JGD 11/14/16

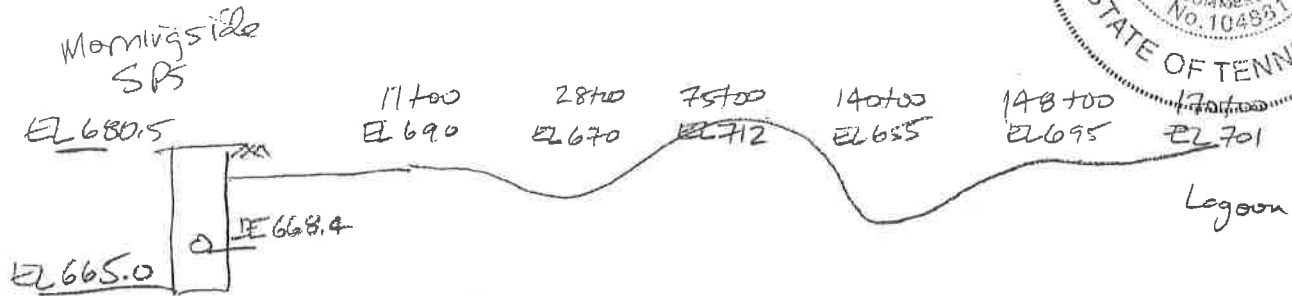
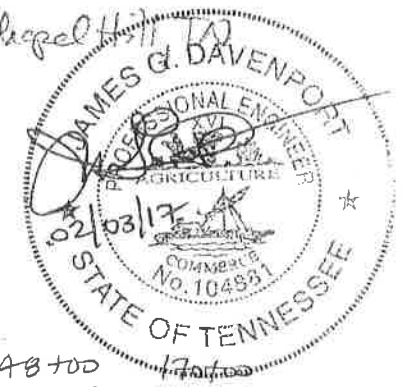
2034-8-inch FM

Chapel Hill, TN

Given: Profile Depicted

Req'd: Hydraulics check

Sol'n:



Check Gravity Flow STA 75400 → 170400

$$EL = 712 - 701 = 11' \quad D = 17000 - 7500 = 9500$$

$$1/1k' = \frac{11}{9.5} = 1.15' / 1k' \quad Q_{c=120} = 0.30 MGD = 208 gpm$$

Result = STA 170400 is Control Point

$$STATIC = 701 - 668 = 33'$$

Pipe Unit	EL 6"	8"
6" CV	36	
6" GV	4	
40'-6"	40	
6" Tee	30	
12-8" 90°		240
17,000'-8"		17,000
6" Tee	30	
180'-6"	180	
	320	17,240

$$\frac{6}{8} = \frac{12}{3} = 4.0$$

$$EL = 4(320) + 17,240 = 18,520$$

Check hydraulics leaving first  
3,550 L.F. as 6"

$$EL = (320 + 3550)4 + (17240 - 3550) = 29,170 L.F.$$

C<sub>2</sub>120

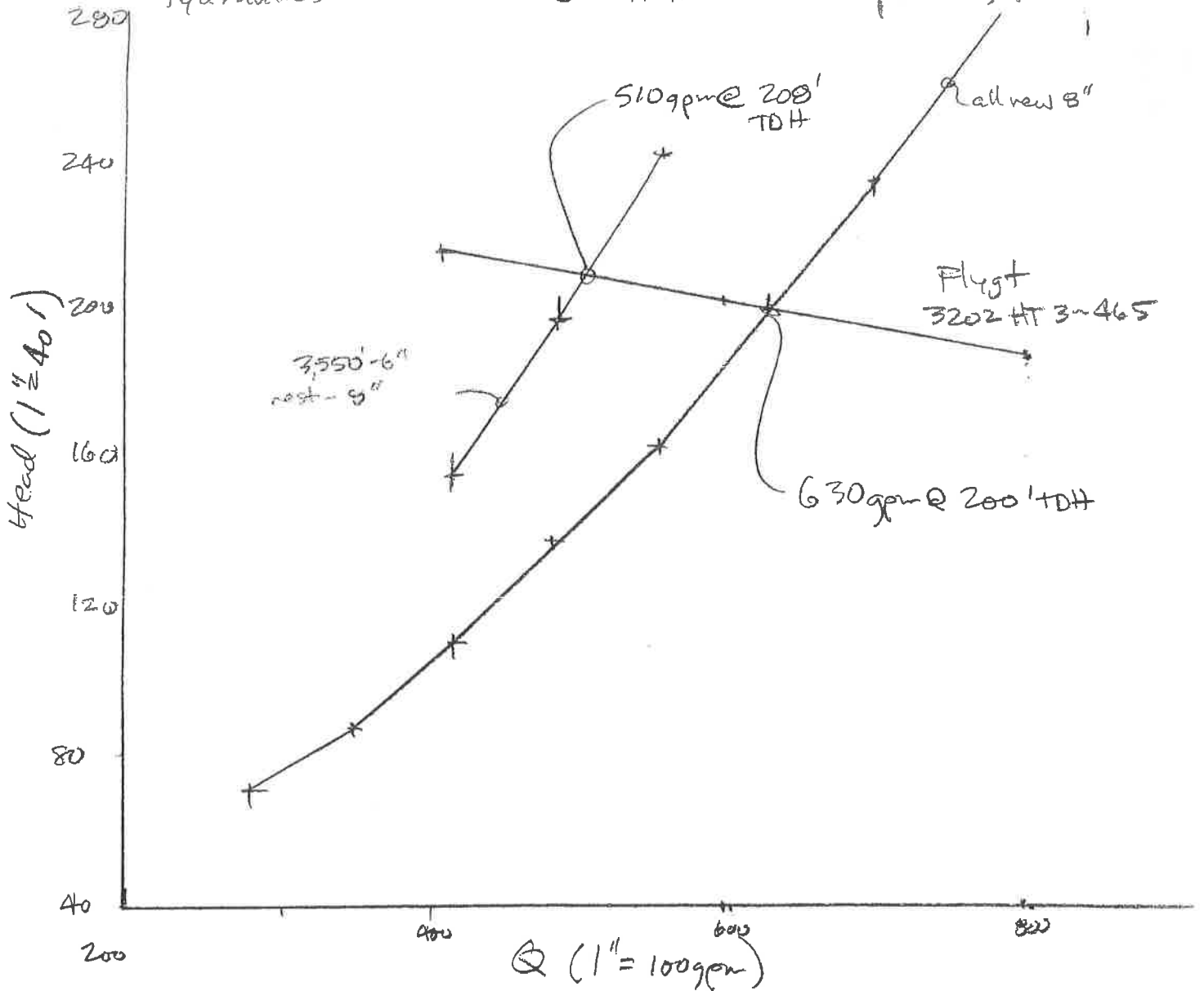
GPM	Q (MGD)	H <sub>L</sub> / 1k'	H <sub>L</sub> f	T.D.H	H <sub>L</sub> f	T.D.H
280	0.4	1.97	37	70	57	90
350	0.5	2.99	56	89	88	121
420	0.6	4.2	78	111	123	156
490	0.7	5.6	104	137	163	196
560	0.8	7.1	131	164	207	240
630	0.9	8.9	165	198	260	293
700	1.0	10.8	200	233		
840	1.2	15.1	280	313		

Hydraulics

IBD 11/14/16

2034 - 8-inch FM  
Chapel Hill, TN

2/



## NP 3202 HT 3~ 465

### Performance curve



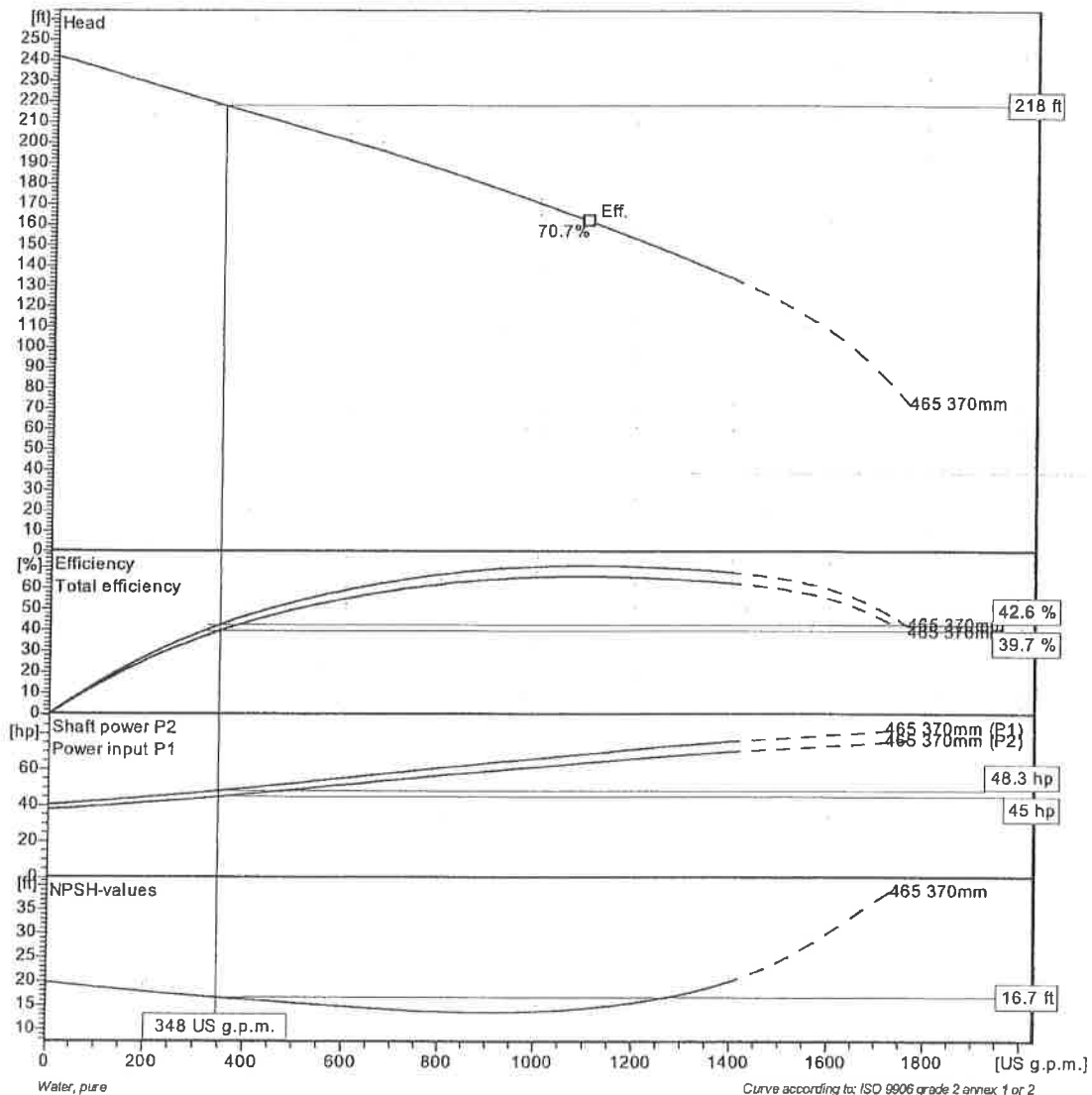
#### Pump

Discharge Flange Diameter 3 15/16 inch  
Suction Flange Diameter 100 mm  
Impeller diameter 14 9/16"  
Number of blades 2

#### Motor

Motor # N3202.180 30-29-4AA-W 70hp  
Stator variant 1  
Frequency 60 Hz  
Rated voltage 460 V  
Number of poles 4  
Phases 3~  
Rated power 70 hp  
Rated current 79 A  
Starting current 550 A  
Rated speed 1775 rpm

Power factor  
1/1 Load 0.90  
3/4 Load 0.87  
1/2 Load 0.80  
Efficiency  
1/1 Load 92.5 %  
3/4 Load 93.0 %  
1/2 Load 93.0 %



Project

Project ID

Created by

Created on  
2015-01-27

Last update